



Structures for Belonging: A Synthesis of Research on Belonging-Supportive Learning Environments

BY KALEEN HEALEY AND CHLOE STROMAN

RESEARCH SYNTHESIS | FEBRUARY 2021

Executive Summary

Belonging is a universal human need that is fundamentally linked to learning and well-being. It describes an individual's experience of feeling that they are, or are likely to be, accepted and respected as a valued contributor in a specific environment. When students experience a sense of belonging in a learning environment, there are both immediate and long-term positive consequences for their academic performance and well-being.

To assess whether we belong in a given context, we search the environment for cues such as interpersonal interactions, the presence (or lack thereof) and success of other people who share our identity markers, and the opportunities we have to participate in and shape the environment. **When we are processing and reacting to these cues because they threaten or undermine our belonging, we have fewer cognitive resources to devote to learning.** Over time, persistent and pervasive worries about belonging can lead people to disengage and disidentify with a given context.

Individual students experience the same cues in the same environment differently—and come to different, well-informed conclusions about whether they belong—both because we each have unique prior experiences and because groups are situated differently in society due to historical power dynamics. It follows that belonging concerns are not equally distributed.

Students from marginalized groups are often expected to learn in exclusionary spaces where they are not valued or authentically included. In these spaces, it may be impossible for them to belong. Due to the social, political, and historical context of U.S. society, Black, Latinx, and Native American students and students from families experiencing poverty are more likely to attend schools that are materially inferior to those afforded their more advantaged peers. This reinforces negative stereotypes and deficit-based narratives about the academic interests and abilities of marginalized groups, while **policies, practices, and norms that are steeped in racist, sexist, and classist narratives and beliefs about intelligence and merit systematically support the belonging of students from advantaged groups.**

We thank each of our reviewers whose feedback on earlier drafts greatly improved the scientific precision and practical relevance of this piece: Patricia Alvarez McHatton, Ron Berger, Laura M. Brady, Mesmin Destin, Camille A. Farrington, DeLeon L. Gray, Cassandra Herring, Elan C. Hope, Simone Ispa-Landa, Robert J. Jagers, Matthew A. Kraft, Michal Kurlaender, Bethany Little, Laura Meili, Dave Paunesku, Gene Pinkard, Shanette C. Porter, Lisa Quay, Sasha Rabkin, Gregory M. Walton, and Nicole Williams Beechum. The content remains the sole responsibility of the authors.

Research from a range of disciplines suggests that belonging-supportive learning environments share a set of interrelated characteristics, which, together, communicate to students that their presence and intellectual and social contributions are valued. Belonging-supportive environments:

- **Respect each student's identity along multiple dimensions**, so that every student feels understood and known as a person and thinker in the environment.
- **Affirm each student's capacity to succeed** in the environment by combining high expectations with the feedback and support needed to meet them.
- **Recognize each student's agency and contributions to the classroom**, institution, community, and society.

Learning environments that support belonging for every student must challenge exclusion and also promote inclusion. Practices, policies, and norms throughout our education system provide signals to students about the extent to which they are respected and valued as members and contributors in the learning environment. Research-based opportunities to systematically support every student's belonging include:

- Increasing **access to learning environments** by ensuring equitable access to accelerated or advanced coursework and eliminating exclusionary and inequitably applied discipline practices in favor of more supportive approaches.

- Supporting **relationships with educators, peers, and families** by helping educators to develop critical consciousness, engaging students in collaborative and small group learning opportunities, and welcoming students' families as educational partners with valuable expertise.
- Utilizing **instructional resources and pedagogy** that counter negative stereotypes and create cultural continuity via instructional activities that draw on students' experiences, use collaboration and exploration, and are relevant for communal goals.
- Attending to **system-level policies and practices** to communicate respect and support for every student, ensure the equitable use of resources and access to information, and engage students in system-level decision-making.

Current examples such as the African American Male Achievement initiative in Oakland Unified School District, the ethnic studies curriculum in San Francisco Unified School District, and the College of Chemistry at University of California, Berkeley show what it looks like to create opportunities to belong within these aspects of the environment. Researchers have documented positive student outcomes from these efforts to challenge exclusion and promote inclusion. Moreover, they demonstrate that stakeholders and decision makers at every level of our education system – not just educators and peers – have opportunities to shape student belonging through the environments they create.

Belonging is a universal human need that is fundamentally linked to learning and well-being.¹ In education, interest in supporting students' belonging has grown in recent years, but with some limitations.

First, despite rigorous research across methods and disciplines showing that it is a vital ingredient for learning in both K-12 and postsecondary contexts, belonging is often conceptualized as something that is “nice to have” but that is tangential to academics. Second, belonging is often thought to be a skill or competency that students can develop, when research demonstrates that belonging is context-specific. Third, belonging is often seen as solely the result of warm interpersonal relationships, and threats to belonging are often seen as exclusively stemming from individual bias and prejudice. In many cases, experiences of belonging or lack thereof are related to broader, underlying

systems in our society that position certain groups, behaviors, and ways of being as superior or as the default along the lines of race and ethnicity, gender and sexual identity, language, class, indigeneity, or ability.

These misconceptions have limited our ability to translate academic research on the *structures*—practices, policies, and norms—that can influence belonging into concrete implications for system- and institution-level decision-makers in the education sector, who play a role in shaping students' experiences of belonging just as much as classroom educators and peers do.

Decades of research on the science of learning and development provide the warrant for reshaping the U.S. education system, especially because it was not designed to welcome or even accommodate many of the students that it serves today.² With the exclusion of Black students remaining legal until 1954, and the forced enrollment of

1 Baumeister and Leary, “The Need to Belong.”

2 Farrington, “Equitable Learning and Development”; Darling-Hammond et al., “Implications for Educational Practice of the Science of Learning and Development.”

Native American students into assimilationist boarding schools legal until 1973, among many other examples, the U.S. has accumulated an “education debt” that continues to disadvantage students of color, working-class students, and other groups that are marginalized³ in society, while advantaging their white, middle- and upper-class peers.⁴

This synthesis draws on research to inform the work of education stakeholders seeking to create and sustain environments in both K-12 and postsecondary contexts that support belonging for every student, not just the narrow group of students who are well-served in the current system. It is intended to illuminate the system- and institution-level factors that create—or hinder—belonging. We assume that all classrooms, courses, schools, and institutions can and should foster belonging for every student, and we investigate what it means to create environments to which students want to belong and in which policies, practices, and norms work together to support their belonging.

While scholarship on belonging has origins in social psychology, research from diverse academic disciplines including cultural psychology, sociology, adolescent development, neuroscience, economics, and education offers insights into the experience of belonging and the structures and outcomes associated with it.⁵ This synthesis is not intended as a comprehensive review but rather provides scientific background and examples from research that can push our collective understanding of and commitment to creating and sustaining learning environments where every student can belong.

We begin by defining belonging and the relationships between belonging and learning and well-being, before turning to the inequitable nature of many learning environments and the characteristics of belonging-supportive environments. We then describe signals and structures related to belonging in four categories: access to learning environments; relationships with educators, peers, and families; instructional resources and pedagogy; and system-level policies and practices.

What is belonging?

Belonging describes an individual’s experience of feeling that they are, or are likely to be, accepted and respected as a valued contributor in a specific environment. To assess whether we belong in a given context, we search—often subconsciously—for cues in the environment.⁶ These cues can include things like interpersonal interactions, the presence (or lack thereof) and success of people who share our identity markers, the spoken and unspoken rules, and the opportunities we have to participate in and shape the environment.⁷ The meaning we make from these cues is shaped by our identities and past experiences. Because the assessment—do *I* belong *here*—involves both an individual and a context, an environment that is welcoming and affirming to one student does not necessarily support belonging for every student.⁸

A student’s assessment of their belonging is based upon reasonable inferences about what is expected of them in a given setting and society. Some educational practices and policies send conspicuous signals that certain students do not belong. Recent high-profile examples of such exclusionary signals include dress code policies that forbid Black students’ hairstyles and legislation that would prevent transgender students from joining the sports teams that align with their gender.⁹

More generally, when students see few people who look like them, or when they see that people who share their background have relatively lower social status or performance in a setting, students can rationally conclude that they do not belong in a space.¹⁰

A student’s assessment of their belonging is based upon reasonable inferences about what is expected of them in a given setting and society.

However, this assessment is not always so straightforward, because our assessment of whether we belong is informed by racist, sexist, and classist narratives and beliefs about intelligence and merit that permeate learning environments.¹¹ Ambiguous cues—for example, an instructor providing critical feedback on a student’s

3 Marginalization is the process by which the contributions of some groups are viewed as less valuable and relevant than others, often in ways that reflect and reproduce historical power relations and social hierarchies (Chen and Horn, “Reviewing the Research on Marginalization in Mathematics Education”).

4 Ladson-Billings, “From the Achievement Gap to the Education Debt”.

5 Belonging has been defined differently across studies and disciplines, including terms such as connectedness, community, engagement, membership, and relatedness (Allen et al., “What Schools Need to Know About Fostering School Belonging”; Gray, Hope, and Matthews, “Black and Belonging at School”).

6 Walton and Brady, “The Many Questions of Belonging”; Gray, Hope, and Matthews, “Black and Belonging at School.”

7 Murphy, Steele, and Gross, “Signaling Threat”; Cheryan et al., “Ambient Belonging”; Hanselman et al., “Threat in Context.”

8 Walton and Brady, “The Many Questions of Belonging.”

9 Belsha, “How Hair Discrimination Bans Are Affecting Students and Schools”; Blad, “School Sports a Fresh Front in State Battles Over Transgender Students’ Rights.”

10 Murphy, Steele, and Gross, “Signaling Threat”; Hanselman et al., “Threat in Context.”

11 Walton and Cohen, “A Question of Belonging”; Ball, “Supporting Professionals to Counteract Racism and Oppression in the Discretionary Spaces of Their Work.”

work—can lead students to a lack of confidence in their belonging known as *belonging uncertainty*.¹² Students from minoritized groups are more likely to experience belonging uncertainty because they are aware of how their group may be perceived and treated in educational settings. Continuing with the critical feedback example, a woman in a mathematics class, aware that women are underrepresented and negatively stereotyped in quantitative fields, might wonder if the criticism indicates that the instructor does not think she is a competent mathematics student who can succeed in the course; a student who is more confident in their belonging might see the feedback as an indication of the instructor's certainty that their work can improve.

Social, emotional, and cognitive processing are neurally intertwined, so attending to cues in the environment because it feels physically or emotionally unsafe comes at the cost of reflection, meaning-making, and future-oriented thinking.

Research from multiple disciplines illuminates several mechanisms through which belonging affects learning, well-being, and other outcomes. For example, physical and psychological threats in the environment can prompt *social identity threat*, or concern about being treated poorly in a setting because of one's group identity. These threats can lead to heightened physiological and cognitive vigilance towards the threat, rather than the task at hand, and decreased belonging and interest in participating.¹³ Other cues can include the numerical representation of "people like me," objects in the environment that are stereotypically associated with certain cultures or genders, or the relative performance or standing of one's identity groups in the space.¹⁴

When we are processing and reacting to these cues because we are worried about whether we belong in an environment, we have fewer cognitive resources to devote to learning. Social, emotional, and cognitive processing are neurally intertwined, so attending to cues in the environment because it feels physically or emotionally unsafe comes at the cost of reflection, meaning-making, and future-oriented thinking.¹⁵

While all individuals can experience worries about their belonging, **people from marginalized groups face stereotypes related to their identity that make them systematically more likely to experience belonging concerns**.¹⁶ Under conditions of *stereotype threat*—concern about confirming a negative stereotype about one's social group and the discriminatory conduct or beliefs that may follow—students experience a physiological stress response. They pay extra attention to monitoring their performance in order to disprove the stereotype, and must work to suppress negative thoughts and emotions.¹⁷ Together, these responses impair working memory and harm performance.¹⁸

Over time, persistent and pervasive worries about belonging can lead people to disengage and disidentify with a given context.¹⁹ As we take up in the next section, multiple studies in diverse K-16 contexts have shown that students' concerns about belonging can have a direct, causal effect on near- and long-term educational outcomes, including their academic motivation, persistence on challenging tasks, course grades, test scores, and progression to graduation.²⁰

Longitudinal studies suggest a self-reinforcing cycle between students' experiences of belonging and the environment; **students who are confident they belong in an environment are able to engage more fully in learning within that environment**.²¹ This in turn can lead other people in the environment to respond to them more positively. For example, educators may perceive the student as more motivated and then connect them to additional opportunities, such as recommending them for advanced courses.²² One study followed up with Black adults who had completed a one-hour belonging exercise 7 to 11 years earlier during their first year at a selective university.²³ Students whose concerns about belonging were mitigated through the exercise were more likely to later report seeking and receiving mentorship during and after college. These relationships with mentors further affirmed the students' belonging and contributed to their positive civic, career, and psychological outcomes.

12 Walton and Cohen, "A Question of Belonging."

13 Murphy, Steele, and Gross, "Signaling Threat."

14 Murphy, Steele, and Gross, "Signaling Threat"; Cheryan et al., "Ambient Belonging"; Hanselman et al., "Threat in Context"; Covarrubias and Fryberg, "The Impact of Self-Relevant Representations on School Belonging for Native American Students."

15 Immordino-Yang, Darling-Hammond, and Krone, "Nurturing Nature."

16 Walton and Cohen, "A Question of Belonging."

17 Schmader, Johns, and Forbes, "An Integrated Process Model of Stereotype Threat Effects on Performance."

18 Beilock, Rydell, and McConnell, "Stereotype Threat and Working Memory."

19 Walton and Cohen, "A Question of Belonging."

20 Carr and Walton, "Cues of Working Together Fuel Intrinsic Motivation"; Master, Cheryan, and Meltzoff, "Reducing Adolescent Girls' Concerns About STEM Stereotypes"; Walton and Wilson, "Wise Interventions"; Yeager et al., "Loss of Institutional Trust Among Racial and Ethnic Minority Adolescents."

21 Walton and Cohen, "A Brief Social-Belonging Intervention Improves Academic and Health Outcomes of Minority Students."

22 Goyer et al., "Self-Affirmation Facilitates Minority Middle Schoolers' Progress along College Trajectories."

23 Brady et al., "A Brief Social-Belonging Intervention in College Improves Adult Outcomes for Black Americans."

How is belonging related to learning and well-being?

When students experience a sense of belonging in a learning environment, we see both immediate and long-term positive consequences for their academic performance and well-being. Researchers often study the causal relationship between belonging and later outcomes by having a randomly selected group of students complete an exercise designed to alleviate students' concerns about belonging, while a comparable group does not. Researchers then examine whether those students who completed the exercise show greater academic engagement and/or performance than those who did not. Such belonging "interventions" might illustrate for participating students how worries about fitting in socially or about academic performance can be common and normal, or help students to think differently about cues they perceive from the environment. They may also communicate high expectations, reframe students' differences as strengths, connect students to resources, or otherwise convey that students are seen, respected, and can be successful in a space.

These exercises often have little to no effect on students who do not have reason to question their belonging in an academic environment (typically white students, middle- and upper-class students, and boys and men). For students who are marginalized in academic settings, these exercises have been shown to increase academic engagement and grades and to decrease discipline citations. For example, a 30-minute, web-based belonging intervention at a selective private university increased the average first-year GPA among negatively stereotyped students of color and first-generation students by nearly 0.1 points, and an exercise with students in introductory biology courses at a large, public research university increased the average course grade for students of color by 0.4 points on a 4-point scale.²⁴ An intervention designed to support belonging among Latino 7th and 8th grade boys reduced discipline citations by 57% relative to the control group.²⁵

Belonging exercises have also been shown to have longer-run effects, including improving year-over-year academic persistence and career outcomes and decreasing yearly doctors' visits.²⁶ An hour-long exercise administered at a broad-access Hispanic-Serving Institution in the Midwest

increased one-year persistence rates for Black, Latinx, and Native American students, as well as first-generation college students of any racial and ethnic background, by 10 percentage points.²⁷ In the study mentioned above that followed up with participants after 7 to 11 years, Black adults who had completed the belonging exercise as college students reported significantly greater career satisfaction and success, psychological well-being, and community involvement and leadership than Black members of the control group; at the time of this longer run follow-up, there were no significant differences between white students who completed the exercise and white students who did not.²⁸

Together, these studies offer compelling evidence that supporting students' sense of belonging has a direct, causal effect on near- and long-term outcomes.²⁹ They also offer insights into some aspects of learning environments that can be made less exclusionary and better attuned to the apprehension that students, especially those from marginalized groups, may have about their belonging.

Belonging concerns can arise from the challenges all students are likely to encounter in academic environments.

In a study at a private university in the Northeast U.S., for example, students were asked to keep a journal about the difficulties in their lives, like stress over a paper or not being invited out with friends, and their "sense of academic fit." While Black and white students experienced comparable amounts of difficulty, Black students' sense of academic fit was diminished by challenges and white students' sense of academic fit was not. Knowing that their group is marginalized in academic settings, Black students may have perceived daily challenges as an indictment of their belongingness at the university, while white students were free from belonging concerns on the basis of their race.³⁰

Belonging concerns can also be exacerbated by educational transitions. As students transition from middle school to high school or from high school to postsecondary, for example, they can experience a clash between their developmental needs and the school environment.³¹ During middle and late adolescence, people are especially sensitive to social relationships and the risks and rewards associated with them (e.g., rejection and approval) and our brains are highly responsive to context and information (e.g., teenagers and young adults often seek out new experiences and advocate passionately for ideals they

24 Yeager et al., "Teaching a Lay Theory before College Narrows Achievement Gaps at Scale," conducted with incoming students at a state flagship four-year institution (experiment 2) and a selective institution (experiment 3); Binning et al., "Changing Social Contexts to Foster Equity in College Science Courses," conducted at a large, public research university.

25 Goyer et al., "Targeted Identity-Safety Interventions Cause Lasting Reductions in Discipline Citations among Negatively Stereotyped Boys," conducted in two middle schools with large Latinx populations.

26 Walton and Cohen, "A Brief Social-Belonging Intervention Improves Academic and Health Outcomes of Minority Students," conducted with students in the second semester of their first year at a selective college.

27 Murphy et al., "A Customized Belonging Intervention Improves Retention of Socially Disadvantaged Students at a Broad-Access University," conducted in all required first-year writing courses at a large, broad-access, Hispanic-Serving Institution in the Midwest.

28 Brady et al., "A Brief Social-Belonging Intervention in College Improves Adult Outcomes for Black Americans."

29 For additional examples, see Walton et al., 2015; Yeager et al., 2016; Williams et al., 2020; Binning et al., 2020; Borman et al., 2019.

30 Walton and Cohen, "A Question of Belonging."

31 Nasir, "Teaching for Equity"; Eccles et al., "Development during Adolescence."

believe in).³² At the same time, advancing to a new educational institution often disrupts friendships, raises academic stakes, and can make it more difficult for students to find their niche in a larger and more impersonal setting.³³ These barriers to belonging can be heightened when school policies and practices divide students (e.g., through separate special education or English language learner classes) or encourage competition rather than uniting students, especially when students are from diverse social groups.³⁴

In the next section, we look more deeply at environments and what makes them places of belonging for some students but not others.

What are we asking students to belong to?

Because of the social, political, and historical context of U.S. society and education, Black, Latinx, and Native American students and students from families experiencing poverty are more likely to attend schools with fewer resources, including funding, advanced coursework options, experienced educators, counselors, and other supports.³⁵ This means they are expected to learn in educational environments that are materially inferior to those afforded to more advantaged students.

Such inequalities can be perpetuated through what researchers call *opportunity hoarding*, or the formal and informal ways that limited resources, such as special treatment by a teacher,³⁶ access to well-funded and highly resourced schools³⁷ and advanced coursework,³⁸ or degrees in economically valuable fields of study,³⁹ are maintained by advantaged groups.⁴⁰ **Such opportunity hoarding facilitates associations between privileged groups and positive academic outcomes; at the same time, being relegated to low-resourced and academically underperforming schools reinforces negative stereotypes and deficit-based narratives about the academic interests and abilities of marginalized groups.**⁴¹

Students from marginalized groups must often navigate settings where they are not authentically valued or understood as individuals. In these spaces, it may be impossible for students to belong.

These stereotypes and narratives permeate our education system. For example, by age 6, children learn to associate brilliance with white men.⁴² Qualitative research on the experiences of Black and Latinx college students shows that these students must consistently contend with racist beliefs and encounters related to their intelligence, which are further amplified in STEM fields.⁴³ An analysis of several national datasets demonstrates how data aggregated by race perpetuate negative stereotypes of Native American students as struggling, while obscuring positive representations of Native American student success and the diversity of their experiences and backgrounds, both within and between tribes.⁴⁴ The “model minority myth” of Asian American people as a universally successful group functions similarly to mask the needs of individual students and the unwelcoming campus climates they may face.⁴⁵

Although these are just a few of many harmful narratives in our society, they demonstrate that students from marginalized groups must often navigate settings where they are not authentically valued or understood as individuals. In these spaces, it may be impossible for students to belong. In response to these narratives and beliefs, students may use strategies like stereotype management. For example, in the study of Black and Latinx college students, many students reported changing their appearance, speech, social circles, and more in order to align more closely with whiteness. When students must alter, conceal, or mask aspects of their identity in pursuit of belonging, even when they are academically thriving, there can be a high psychological and emotional cost.⁴⁶

Students who are not marginalized in academic settings benefit from other advantages as well. **Learning environments often replicate and perpetuate the dominant culture of the U.S., which privileges students**

32 Brady et al., “A Brief Social-Belonging Intervention in College Improves Adult Outcomes for Black Americans.”

33 Galván, “Insights About Adolescent Behavior, Plasticity, and Policy from Neuroscience Research”; Crone and Dahl, “Understanding Adolescence as a Period of Social-Affective Engagement and Goal Flexibility.”

34 Juvonen, “Sense of Belonging, Social Bonds, and School Functioning.”

35 Duncan and Murnane, *Whither Opportunity?*; Fryberg, Covarrubias, and Burack, “The Ongoing Psychological Colonization of North American Indigenous People.”

36 Calarco, “Avoiding Us versus Them.”

37 Rury and Saatcioglu, “Suburban Advantage.”

38 Lewis and Diamond, *Despite the Best Intentions*.

39 Riegle-Crumb, King, and Irizarry, “Does STEM Stand Out?”

40 Tilly, *Durable Inequality*; Powell and Menéndez, “The Problem of Othering.”

41 Oyserman and Lewis, “Seeing the Destination AND the Path.”

42 Jaxon et al., “The Acquisition of Gender Stereotypes About Intellectual Ability.”

43 McGee, “Devalued Black and Latino Racial Identities.”

44 Brady, Higheagle Strong, and Fryberg, “The Mismeasure of Native American Students.”

45 Museus and Kiang, “Deconstructing the Model Minority Myth and How It Contributes to the Invisible Minority Reality in Higher Education Research”; Nguyen et al., “Beyond Compositional Diversity.”

46 Calabrese Barton and Tan, “Beyond Equity as Inclusion.”

from certain groups, including white students, students from middle- and upper-class families, boys and men, cisgender and straight students, native English speakers, students without disabilities, and Christian students. If we consider the messages repeatedly sent to these students throughout their educational experiences about their value and capacity as thinkers—for example, educators who share their community and cultural backgrounds, curriculum that reflects the contributions, language, practices, and experiences of people like them, and assessments that align with the dominant cultural value of independent achievement—we can see how their belonging is supported systematically and why their belonging concerns are less likely to be detrimental to their academic experiences and outcomes.

Individual students can experience the same environment differently—and come to different, well-informed conclusions about whether they belong in that environment—both because we each have unique prior experiences and because groups are situated differently in society due to historical power dynamics.

Because the dominant culture is so pervasive, it can become invisible or taken for granted by people who gain advantages from it.⁴⁷ Consider, for example, the norms often espoused by U.S. colleges that encourage students to follow their passions or realize their potential. For students from middle- and upper-class backgrounds, who have grown up with greater access to economic capital, fewer environmental constraints, and greater opportunities for choice, influence, and control in their lives, these norms are likely to resonate with their goals.⁴⁸ Students from working-class backgrounds, however, are more likely to have interdependent motives for attending college, such as contributing to their family or community. This mismatch between a working-class student's goals and the institution's norms can undermine the student's sense of belonging and academic performance. A lab study of undergraduate students at one public and one private university demonstrated that these negative effects could be avoided by presenting the university culture in terms of interdependence—for example, highlighting opportunities to work together with and learn from others.⁴⁹

This example shows that **individual students can experience the same environment differently—and come to different, well-informed conclusions about whether they belong in that environment—both because we each have unique prior experiences and because groups are situated differently in society due to historical power dynamics.** When our educational environments are

characterized by the dominant culture, it narrows all students' opportunities to learn. The concept of "mirrors and windows" has been used to communicate this idea.⁵⁰ Students need to see themselves in "mirrors" in their education to know that people like them are valued; when they can't see themselves, or the representations that are available are distorted or negative, students receive a clear message that they are outsiders, both in school and society.

Students also need "windows" in their education to learn about the lives and experiences of others. When an environment reflects only the dominant culture, some students get mostly mirrors while others get mostly windows, and all students miss out on a core part of their education.

What does research tell us about the characteristics of belonging-supportive environments?

A growing body of research demonstrates that **environments causally influence students' sense of belonging in ways that affect their outcomes.** For example, a recent study of first-time 9th graders in all public schools in Chicago found that high schools differ in the degree to which they support their 9th graders' social well-being, including their sense of belonging. Schools that had a larger positive effect on their students' social well-being also reduced school-based arrests and increased high school graduation, college enrollment, and college persistence. Moreover, a school's effect on its students' social well-being was a much stronger predictor of these outcomes than the school's effect on its students' test scores.⁵¹

Environments causally influence students' sense of belonging in ways that affect their outcomes.

Just as importantly, we know that **learning environments are malleable and can be made more attuned to students' experiences.** Emerging evidence suggests that teachers can change their classroom practices to demonstrate greater caring, provide more growth-oriented feedback, and more consistently engage students in meaningful work. These changes are both visible and consequential to students: middle and high school students who perceived increases in these learning conditions also reported an increased sense of classroom belonging and were more likely to earn an A or B in the class.⁵²

Research from a range of disciplines suggests that belonging-supportive learning environments share a set of interrelated characteristics, which, together, communicate to students that their presence and intellectual and social

47 Phillips and Lowery, "Herd Invisibility."

48 Oyserman and Lewis, "Seeing the Destination AND the Path."

49 Stephens et al., "Unseen Disadvantage."

50 Bishop, "Mirrors, Windows, and Sliding Glass Doors."

51 Jackson et al., "School Effects on Socio-Emotional Development, School-Based Arrests, and Educational Attainment."

52 Gripshover and Paunesku, "How Can Schools Support Academic Success While Fostering Healthy Social and Emotional Development?"

contributions are valued and respected. The form and expression of these characteristics will necessarily vary in response to the specific students in the environment, including their developmental stage. Educators should be careful to attend to individual students, not identity groups, because no two students experience the same environment in the same way.⁵³ Beyond being physically and emotionally safe places for students, belonging-supportive environments:

- **Respect each student's identity along multiple dimensions, so that every student feels understood and known as a person and thinker in the environment.** Rather than feeling a need to conceal or downplay aspects of their identity in order to fit in, each student is supported in exploring and expressing their sense of self.⁵⁴ Students experience cultural continuity and are able to leverage the knowledge and skills they develop and utilize outside of school in their school-based learning.⁵⁵ Classroom practices and institutional policies and communications signal that diversity in students' backgrounds is valued and is an important component of success.⁵⁶
- **Affirm each student's capacity to succeed in the environment by combining high expectations with the feedback and support needed to meet them.** Educators and institutions communicate confidence in students' ability to improve and provide clear guidance and strategies for how to succeed.⁵⁷ The combination of targeted feedback, high expectations, and explicit support is important: messages to students about their ability to improve and succeed are undermined when they overemphasize effort and neglect the importance of applying effective strategies and seeking help,⁵⁸ and students can question the intent behind teachers' critical feedback absent high expectations and support.⁵⁹
- **Recognize each student's agency and contributions to the classroom, institution, community, and society.** Students are treated as knowledgeable, capable, and responsible members and decision-makers in the learning environment and society. They use their voice to ask questions, make choices and requests, and shape the learning environment. Students engage in purposeful, relevant instructional activities and make

meaning from their learning experiences, rather than having the meaning handed to them.⁶⁰ Adolescents' developmental need to contribute to others is supported as they explore, critique, and act upon salient issues in the classroom, institution, and broader community.⁶¹

Creating learning environments that support belonging for every student... requires social, historical, and political awareness to avoid defaulting to practices, policies, and norms that reinforce the dominant culture. It also requires a commitment to countering the negative messages that students from marginalized groups often repeatedly receive about their belonging from widely accepted narratives and structures in society and in academic contexts.

To name a significant caveat, the characteristics listed above are drawn from research that has primarily focused on students and settings in individualistic cultures that prioritize independence over communal goals, which carry greater significance in more interdependent cultures.⁶² Psychological research has been criticized for overgeneralizing from studies of people in "Western, educated, industrialized, rich, and democratic contexts"⁶³ and for not attending to how race in particular shapes experiences and psychology.⁶⁴ This synthesis incorporates literature that centers the role of race in shaping educational experiences in the U.S., as well as work that addresses how learning environments can better recognize and be made more relevant to students who hold more communal goals.

Creating learning environments that support belonging for every student, including those from other cultural models, requires social, historical, and political awareness to avoid defaulting to practices, policies, and norms that reinforce the dominant culture. It also requires a commitment to countering the negative messages that students from marginalized groups often repeatedly receive about their belonging from widely shared narratives and structures in society and in academic contexts. In the next section, we offer examples from research to illustrate how these characteristics can show up in learning environments.

53 Gutiérrez and Rogoff, "Cultural Ways of Learning."

54 Gray, "Is Psychological Membership in the Classroom a Function of Standing out While Fitting In?"

55 National Academies of Sciences, Engineering, and Medicine, *How People Learn II*.

56 Stephens, Hamedani, and Destin, "Closing the Social-Class Achievement Gap."

57 Yeager et al., "Loss of Institutional Trust Among Racial and Ethnic Minority Adolescents"; Muenks et al., "Does My Professor Think My Ability Can Change?"; Carrell and Kurlaender, "My Professor Cares"; Mendoza-Denton et al., "Differences in STEM Doctoral Publication by Ethnicity, Gender and Academic Field at a Large Public Research University"; Brady et al., "Student Academic Standing Success Project."

58 Dweck and Yeager, "Mindsets."

59 Yeager et al., "Loss of Institutional Trust Among Racial and Ethnic Minority Adolescents."

60 Mitra, "The Significance of Students."

61 Fuligni, "The Need to Contribute During Adolescence."

62 Yosso, "Whose Culture Has Capital?"; Gray et al., "Engaging Black and Latinx Students through Communal Learning Opportunities."

63 Brady, Fryberg, and Shoda, "Expanding the Interpretive Power of Psychological Science by Attending to Culture."

64 DeCuir-Gunby and Schutz, "Researching Race Within Educational Psychology Contexts."

How can we structure environments to support every student's sense of belonging?

Research in K-12 and postsecondary contexts and from multiple disciplines illuminates an array of structures—policies, practices, and norms—that provide signals to students about the extent to which they are respected and valued as members and contributors in a space. Opportunities to foster belonging implicate stakeholders and decision makers throughout our education system.

Building learning environments that support belonging, and therefore learning and well-being, for every student entails both challenging exclusion and promoting inclusion.

We have grouped these aspects of the learning environment into a few overlapping categories. This set of examples from research suggests that **building learning environments that support belonging, and therefore learning and well-being, for every student entails both challenging exclusion and promoting inclusion**. As illustrated below, some educational structures are exclusionary in that they physically prevent students from being present in a learning environment or otherwise preclude their access to resources and opportunities. Others may be technically open to all students but relegate the knowledge, contributions, language, and practices of some groups to the margins. Challenging exclusion is complex because many exclusionary policies, practices, and norms are deeply ingrained in our education system and acknowledging them as such draws attention to the systemic advantages afforded to the social groups who have benefited from them.

Similarly, some approaches that purport inclusion offer only surface-level accommodations for diversity—for example, solely elevating “food, fabric, and festivals”⁶⁵—while truly inclusive educational spaces support belonging for every student by affirming their sense of self, capacity to succeed, and agency.

There are, no doubt, many more factors to be considered in the shared work of building and sustaining belonging-supportive environments and we encourage readers to reflect on connections between these examples and the educational contexts they are closest to.

Access to learning environments

Educational spaces that systematically deny access to some students provide a clear signal about who belongs in that environment. When this exclusion plays out along lines

of race and ethnicity, gender and sexual identity, language, class, indigeneity, or ability, it can also reify stereotypes and “othering” of marginalized groups.⁶⁶

The school building and campus closures related to the COVID-19 pandemic offer a clear case study related to students’ access to the learning environment. Despite efforts to distribute devices and equip students with internet access when in-person learning was halted, in the fall of 2020 it was estimated that approximately 3 million K-12 students had last accessed formal education in March 2020. Students with disabilities, multilingual learners, students in foster care, students experiencing homelessness, and students from families experiencing economic disadvantage were thought to be overrepresented in this group.⁶⁷ In many cases, this lack of access corresponds with structural barriers that these students faced before the pandemic. Closing the digital divide will be a key undertaking for policymakers and system leaders in the coming years to enable the creation of belonging-supportive environments.

Environments in which access to particular learning opportunities and resources is subject to strong gatekeeping (e.g., through minimum GPA requirements or teacher recommendations) represent another mechanism of exclusion. For example, a recent analysis of nationally representative data on 9th graders showed that, among students who took an accelerated mathematics class in 8th grade, Black students were about half as likely as their white schoolmates to remain on the accelerated track and take an advanced mathematics course in 9th grade, a difference that could not be accounted for by differences in academic performance in 8th grade.⁶⁸

Practices like academic tracking, English language learner courses, and special education pull-out classes that physically separate students and constrict academic content can underscore differences among peers and lead to stigmatization, especially when negative labels are disproportionately applied to students from marginalized groups and when there are few opportunities for students to move between tracks or ability groups.⁶⁹ Similarly, as systems respond to the pandemic-related losses of instructional time with plans for remediation and tutoring, it will be important to avoid stigmatizing students for accessing the additional academic supports.

Increasing access to rigorous learning environments involves supporting students to enter these spaces (i.e., challenging exclusion), but also supporting their well-being and success within the space (i.e., promoting inclusion). Black and Latinx students are underrepresented in Advanced Placement high school courses, for example,

65 Hammond, “Who Gets to Thrive? How Insights from the Science of Learning and Development Can Help Advance Anti-Racist, Equitable Learning Environments and Education Practices.”

66 Powell and Menéndez, “The Problem of Othering.”

67 Korman, O’Keefe, and Repka, “Missing in the Margins.”

68 Irizarry, “On Track or Derailed? Race, Advanced Math, and the Transition to High School.”

69 Juvonen et al., “Promoting Social Inclusion in Educational Settings.”

but qualitative and quantitative research suggests that their experiences in these courses undermine their sense of belonging and academic performance, and highlights the need for expanded access to learning environments that are both rigorous and belonging-supportive.⁷⁰

Seeing few people who share their identity markers in their classes or the broader student body can also lead students to question their belonging.⁷¹ A study of nearly 20,000 students in 58 Maryland high schools found that the racial and ethnic diversity of the student body was positively associated with Black students' sense of belonging; the relationship between student body diversity and white students' belonging was not statistically significant, suggesting that increasing racial diversity does not threaten white students' belonging.⁷² Data related to court-ordered school integration in the 1960s-1980s reveal that for Black students, desegregation was accompanied by increased access to school resources, such as smaller class sizes and greater per-pupil spending, which resulted in significant improvements in academic and health outcomes.⁷³ White students' academic outcomes were not affected by desegregation.

Approaches that seek to avoid stigmatizing discipline, such as Positive Behavioral Interventions and Supports (PBIS) and restorative justice, have been linked to greater school connectedness... However, many schools implement supportive discipline programs alongside more authoritarian practices such as using police officers to enforce the code of conduct; leaving such options available threatens to deepen racial and gender inequities in discipline.

Qualitative research, however, underscores the limitations of desegregation when whiteness and middle-class culture and norms are maintained as the standard. One ethnographic study of students in grades 8-10, found, for example, that Black girls who participated in an urban-to-suburban racial integration program were stereotyped as "loud" and excluded from social cliques in their wealthy suburban school, limiting their opportunities to belong.⁷⁴

Access can also be restricted by exclusionary and inequitably applied discipline practices that result in students being physically removed from the learning environment. Punitive discipline practices do not make students feel safer⁷⁵ and biased use of discipline can strengthen negative stereotypes.⁷⁶ High school students who perceived inequitable treatment by race, gender, or social class in their school reported a weaker sense of connection to school.⁷⁷ The study of Maryland high school students mentioned above found that Black students who perceived racial disproportionality in the use of suspensions, even if they were not suspended themselves, also reported lower levels of belonging.⁷⁸

Approaches that seek to avoid stigmatizing discipline, such as Positive Behavioral Interventions and Supports (PBIS) and restorative justice, have been linked to greater school connectedness. In a study using data from 745 California high schools, the use of supportive practices to deter homophobic bullying was related to less bullying, greater school connectedness, and served as a protective factor for students who had experienced homophobic bullying. Students in schools that used punitive discipline practices and who had not experienced bullying reported low levels of school connectedness, comparable to that of students who had been bullied.⁷⁹

However, many schools implement supportive discipline programs alongside more authoritarian practices such as using police officers to enforce the code of conduct; leaving such options available threatens to deepen racial and gender inequities in discipline.⁸⁰ Programs to help teachers develop a more empathic mindset—by getting to know their students better as individuals and taking students' perspective after perceived misbehavior—can help to sideline implicit bias, improve student-teacher relationships, and reduce their use of suspensions.⁸¹

Relationships with educators, peers, and families

In academic settings, teachers offer some of the most readily apparent signals to students about their belonging. In both K-12 and postsecondary contexts, students who perceive greater emotional and academic support from their teacher or instructor report greater connectedness.

70 Bjorklund, Jr., "'Whoa. You Speak Mexican?'; James et al., "Opportunity for All."

71 Morales-Chicas and Graham, "Latinos' Changing Ethnic Group Representation From Elementary to Middle School"; Fong et al., "Ya'at'eeh."

72 Bottiani, Bradshaw, and Mendelson, "A Multilevel Examination of Racial Disparities in High School Discipline."

73 Johnson, "Long-Run Impacts of School Desegregation & School Quality on Adult Attainments."

74 Ispa-Landa, "Gender, Race, and Justifications for Group Exclusion."

75 Skiba and Losen, "From Reaction to Prevention."

76 Okonofua, Walton, and Eberhardt, "A Vicious Cycle."

77 Debnam et al., "Equity, Connection, and Engagement in the School Context to Promote Positive Youth Development."

78 Bottiani, Bradshaw, and Mendelson, "A Multilevel Examination of Racial Disparities in High School Discipline."

79 Day, Snapp, and Russell, "Supportive, Not Punitive, Practices Reduce Homophobic Bullying and Improve School Connectedness."

80 Ispa-Landa, "Racial and Gender Inequality and School Discipline."

81 Okonofua, Walton, and Eberhardt, "A Vicious Cycle"; Okonofua, Perez, and Darling-Hammond, "When Policy and Psychology Meet"; Ispa-Landa, "Persistently Harsh Punishments Amid Efforts to Reform."

Many studies rely on student surveys to gather quantitative data about these relationships. For example, in a sample of predominantly white psychology undergraduates, students who perceived more academic and social support from their instructor reported a higher sense of belonging in that class.⁸² A meta-analysis of 51 studies conducted in the U.S., Australia, and New Zealand examined the individual, classroom, school, and contextual factors related to belonging in high school. Students' sense of belonging was most strongly correlated with perceived teacher support, including teacher fairness, friendliness, and the extent to which teachers demonstrated care and promoted students' independence.⁸³

Research on belonging-supportive relationships also suggests that educators need critical consciousness, or an understanding of how capitalism, racism, poverty, and gentrification shape the communities their students live in, as they attend to the explicit and implicit messages they convey to students about their capabilities as thinkers.

Another study in 65 classrooms across four ethnically and economically diverse school districts highlighted that, from students' perspectives, social and instructional supports can be deeply interrelated.⁸⁴ Over the course of a school year, 6th and 7th grade students came to perceive mastery-focused instruction—in which learning, effort, and improvement are emphasized over standardized assessment and milestones—and teacher support—in which instructors communicate care and provide advice and assistance—as one and the same.

Qualitative and mixed-method research sheds additional light on the competencies and skills that teachers need to develop supportive relationships with students. A study from two racially diverse schools in the Midwest, for example, found that students who reported stronger developmental relationships—in which their teachers expressed care, challenged them, provided support, shared power, and expanded their possibilities—reported greater engagement and belonging.⁸⁵ Focus groups with students in this study indicated that **relationally-skilled teachers convey several meta-messages in their interactions with students, including a commitment to support the student with fairness, transparency, and high expectations.**

Research on belonging-supportive relationships also suggests that educators need critical consciousness, or an understanding of how capitalism, racism, poverty, and gentrification shape the communities their students live in,⁸⁶ as they attend to the explicit and implicit messages they convey to students about their capabilities as thinkers. For example, in a mixed-method study in five urban schools, Black and Latinx students of empathic teachers—defined as those who have emotional and sociopolitical awareness, affirm student identity, and see themselves as their students' partner in struggles—were more likely to report feeling valued and like their class was a family than students of teachers who lacked these characteristics.⁸⁷

In mixed-method analyses of 12 urban elementary schools in southern Arizona, teachers who held high expectations and critical consciousness were more likely to use asset-based instructional practices, especially honoring students' home language (in this case, Spanish).⁸⁸ Moreover, another study in the same context demonstrated that students whose teachers held high expectations and critical consciousness scored higher on mathematics standardized tests than students of teachers who held high expectations alone.⁸⁹

As educators develop their critical consciousness, the education system has more potential to nurture the same skill in students, who in turn can disrupt systems of inequality and create belonging-supportive spaces for others. As early as middle school, students who have developed critical reflection skills are able to articulate how issues in their school or community are shaped by structural inequities and power dynamics, rather than being driven solely by individual choices, as illustrated in a qualitative study of Black early adolescents in two midwestern schools.⁹⁰

For educators, using instructional practices that challenge exclusion is just as important as developing practices that promote inclusion. Research on classroom discourse, for example, finds that subtle, inequitable patterns can emerge in terms of the frequency with which students are called on and the types of questions they are asked, even among experienced educators who express a commitment to equity.⁹¹ Helping teachers develop their critical capacities and providing time and space to continuously improve their practice is a key role for administrators, teacher educators, and professional learning providers.

82 Zumbrunn et al., "Support, Belonging, Motivation, and Engagement in the College Classroom."

83 Allen et al., "What Schools Need to Know About Fostering School Belonging."

84 Turner et al., "Getting to Know My Teacher."

85 Sethi and Scales, "Developmental Relationships and School Success."

86 Muhammad, "A Plea for Identity and Criticality"; Freire, *Pedagogy of the Oppressed*.

87 Maloney and Matthews, "Teacher Care and Students' Sense of Connectedness in the Urban Mathematics Classroom."

88 Matthews and López, "Speaking Their Language."

89 López, "Altering the Trajectory of the Self-Fulfilling Prophecy."

90 Hope and Bañales, "Black Early Adolescent Critical Reflection of Inequitable Sociopolitical Conditions."

91 Reinholz and Shah, "Equity Analytics."

Given that middle through late adolescence is a time of increased attention to and reliance on peers, alleviating students' concerns about fitting in socially stands to support their sense of belonging as well as their engagement in instructional activities. In a study of middle and high school students, students' perceived sense of fit with their classmates predicted their class participation and later achievement.⁹² **Teachers can support positive interactions among peers by structuring collaborative and small group learning opportunities in which students share and explain their thinking, observe strategies used by others, and resolve differing perspectives.**⁹³ In middle and high school settings, such practices also prepare students to meet the expectations for collaborative participation that they are likely to encounter in postsecondary education environments.⁹⁴

Research also suggests that peer relationships are important for the broader institutional climate; a series of randomized controlled trials at a large public university found that when students received communications about their peers' pro-diversity values and attitudes, they reported a more inclusive campus climate several weeks later.⁹⁵ Moreover, marginalized students reported a stronger sense of university belonging and earned higher course grades, comparable to those of their non-marginalized peers, than marginalized students who were not exposed to the pro-diversity messages.

Welcoming students' families as educational partners with valuable expertise can help to foster a sense of continuity between students' learning experiences inside and outside of school. In a study that followed a sample of U.S. and Chinese students from the fall of 7th grade to the spring of 8th grade, parents' involvement in their children's school-based learning, such as attending parent-teacher conferences and helping with homework, was associated with the student being more motivated and engaged in school and ultimately earning higher grades.⁹⁶

Schools can support teachers in engaging parents and families by building in time for teachers to reach out by phone, email, or text, or conduct home visits in explicitly

collaborative, supportive ways.⁹⁷ A series of randomized controlled trials with middle and high school students suggests that leveraging technology and structured protocols to communicate regularly with students' families, including providing updates about the students' work and specific actions they can take, can engage parents and help them to support their child's learning.⁹⁸ Schools can also provide forums for parents to learn from other parents about how to help their adolescent children think about challenges and the future, as demonstrated by a study that featured experienced parents of 8th grade students on a panel for other parents.⁹⁹

Instructional resources and pedagogy

As alluded to above, there is no such thing as culturally neutral teaching.¹⁰⁰ **Instructional resources and pedagogy communicate to students what—and whose—knowledge, practices, contributions, and perspectives are seen as valued and legitimate.** They frequently reinforce and perpetuate marginalization while preserving and legitimizing racist, sexist, and classist beliefs about the primacy of the dominant culture.¹⁰¹

There is no such thing as culturally neutral teaching. Instructional resources and pedagogy communicate to students what—and whose—knowledge, practices, contributions, and perspectives are seen as valued and legitimate.

The identities represented in classrooms, class materials, and curricula offer indications to students about who is and who is not likely to be successful in the environment. Elevating role models who share identity markers with marginalized students may be a particularly powerful means of countering the effects of negative stereotypes by offering these students a more expansive vision of their potential.¹⁰² In a study of middle school students in Washington, for example, Native American students who read about an academically successful Native American adult reported higher school belonging than Native American students who read about a white or ethnically ambiguous role model.¹⁰³

92 Mikami et al., "Perceptions of Relatedness with Classroom Peers Promote Adolescents' Behavioral Engagement and Achievement in Secondary School."

93 Darling-Hammond et al., "Implications for Educational Practice of the Science of Learning and Development"; Cohen et al., "Complex Instruction."

94 Johnson, "Social Class, Culture, and the Reproduction of Inequality in Collaborative Experiences among College Students in STEM."

95 Murrar, Campbell, and Brauer, "Exposure to Peers' Pro-Diversity Attitudes Increases Inclusion and Reduces the Achievement Gap."

96 Cheung and Pomerantz, "Why Does Parents' Involvement Enhance Children's Achievement?"

97 Darling-Hammond et al., "Implications for Educational Practice of the Science of Learning and Development."

98 Kraft and Dougherty, "The Effect of Teacher–Family Communication on Student Engagement"; Kraft and Rogers, "The Underutilized Potential of Teacher-to-Parent Communication."

99 Destin and Svoboda, "A Brief Randomized Controlled Intervention Targeting Parents Improves Grades during Middle School."

100 Rogoff, "Cognition as a Collaborative Process"; Nasir, Hand, and Taylor, "Culture and Mathematics in School"; Bang and Medin, "Cultural Processes in Science Education."

101 Sleeter, "Confronting the Marginalization of Culturally Responsive Pedagogy."

102 Dasgupta, "Ingroup Experts and Peers as Social Vaccines Who Inoculate the Self-Concept."

103 Covarrubias and Fryberg, "The Impact of Self-Relevant Representations on School Belonging for Native American Students."

In another series of studies with upper-level undergraduate students, women who interacted with stereotypical computer science role models (e.g., computer science majors who preferred playing video games and programming over playing sports and hanging out with friends) were less interested in pursuing computer science, even when the role models were women.¹⁰⁴ This suggests that women's interest in STEM fields depends not only on numerical gender representation, but also perceptions related to stereotypically female gender roles (e.g., working and building relationships with others).

Similarly, because brilliance is stereotypically associated with men, women may be less interested in pursuing fields where common narratives suggest that brilliance is required for success. Course syllabi, assessments, and messages from faculty instructors emphasizing that intellectual ability is malleable and can improve, rather than implying that not all students have what it takes to succeed, can help some women identify with more male-dominated fields and experience less concern that they do not fit in those contexts.¹⁰⁵

Instructional resources and pedagogy can also promote inclusion by utilizing a more complete range of students' home cultures (e.g., community and family values and ways of being; heritage languages) in the learning process and leveraging the unique assets that each student brings to the classroom.¹⁰⁶

Instructional activities that are relevant to students' community or draw on their experiences outside of school or coursework can help students to feel connected to the learning environment. Students' motivation is nurtured by **learning experiences that are meaningful, that take place in caring environments, and that promote their ability to understand and critique social structures.**¹⁰⁷ When assessing what helps them to feel a sense of belonging on campus, Native American community college students, for example, tended to give greater weight than their non-Native American peers to the extent that their college experience helps them to contribute to the welfare of their community.¹⁰⁸ A study analyzing survey data from a national sample of Black youth, ages 15-25, found that examining and acting on issues in the community via academic activities was associated with greater civic

engagement. Civic engagement among these youth was also associated with their feeling more efficacious in the broader community and society.¹⁰⁹

Research on literacy education for Black middle and high school students, as another example, encourages presenting students with literature that not only builds cognitive skills and strategies, but also connects to social, economic, political, or spiritual themes and provides positive "roadmaps" for the future.¹¹⁰ These types of experiences can improve students' academic outcomes by providing meaningful opportunities to learn about one's self and one's place in the world. Ethnic studies pedagogy takes this as its central goal, and has had promising results.¹¹¹ A 9th grade ethnic studies course used in high schools in San Francisco Unified School District, in which students were supported to explore their own identities and examine history and politics from the perspectives of various racial and ethnic groups, substantially improved attendance, credits earned, and GPAs of participating students.¹¹²

These *culturally responsive* approaches—in which a wider body of cultural knowledge, experiences, and perspectives are incorporated into schoolwork to foster critical thinking, a sense of community, and interpersonal skills—involve not only course content but also teaching practices, or "how" content is taught.¹¹³ **Instructional activities that welcome students' uses of language, utilize more collaboration and exploration, and further communal goals can create cultural continuity for students who are disadvantaged by and may otherwise feel disengaged by practices that reflect the stereotypically masculine and Western values of independence and competition.**¹¹⁴

Recent research demonstrates that collaborative work that is connected to helping others can promote cultural continuity for Black and Latinx middle school students who value community and cooperation.¹¹⁵ A study at two elite colleges showed that working together, rather than independently, on a problem-solving task improved the performance and sense of fit of first-generation college students; moreover, pairs of first-generation students outperformed pairs of students with at least one parent with a bachelor's degree.¹¹⁶

104 Cheryan et al., "Do Female and Male Role Models Who Embody STEM Stereotypes Hinder Women's Anticipated Success in STEM?"

105 Bian et al., "Messages About Brilliance Undermine Women's Interest in Educational and Professional Opportunities."

106 Yosso, "Whose Culture Has Capital?"; Ladson-Billings, "But That's Just Good Teaching! The Case for Culturally Relevant Pedagogy."

107 Kumar, Zusho, and Bondie, "Weaving Cultural Relevance and Achievement Motivation Into Inclusive Classroom Cultures."

108 Fong et al., "Ya'at'e'eh."

109 Hope and Jagers, "The Role of Sociopolitical Attitudes and Civic Education in the Civic Engagement of Black Youth."

110 Tatum, "Engaging African American Males in Reading."

111 Tintiangco-Cubales et al., "Toward an Ethnic Studies Pedagogy."

112 Dee and Penner, "The Causal Effects of Cultural Relevance."

113 Gay, *Culturally Responsive Teaching*.

114 Cheryan and Markus, "Masculine Defaults"; Chen and Horn, "Reviewing the Research on Marginalization in Mathematics Education"; Agarwal, "Disrupting Gendered Epistemic Injustice in K-12 Mathematics – A Research Synthesis."

115 Gray et al., "Engaging Black and Latinx Students through Communal Learning Opportunities."

116 Dittmann, Stephens, and Townsend, "Achievement Is Not Class-Neutral."

System-level policies and practices

System-level policies and practices are necessary to facilitate almost all of the belonging-supportive structures discussed so far. They can also send signals in and of themselves about who is respected in a space. Some signals, like confusing instructions or other bureaucratic barriers to enrolling in courses, are apparent to all students and can lead to reduced belonging or exacerbate belonging uncertainty.¹¹⁷ Other structures can contribute to exclusion when they convey disrespect or disregard for certain groups.

Sometimes, these signals are fairly visible and straightforward. When an institution, for example, does not adequately support survivors of sexual assault, or fails to prevent sexual assault, women and students with marginalized sexual orientations can experience *institutional betrayal* and with it, a range of negative psychological outcomes.¹¹⁸ Research also shows that Native American mascots (the majority of which are associated with schools) result in lower self-esteem, lower community worth, less capacity to generate achievement-related ideas about who they might become, and greater levels of negative affect among Native American high school and college students while increasing negative stereotypes and prejudice among non-Native American students.¹¹⁹

Institutions and systems can also support belonging through policies and norms that ensure equitable access to resources and illuminate the “hidden curriculum,” especially in environments that have historically excluded some groups.

Individuals can experience bias and its exclusionary effects in less visible ways as well, in settings that have been termed *prejudiced places* in recent scholarship.¹²⁰ **Places become prejudiced when their policies and norms systematically benefit some groups and disadvantage others.** This prejudice can be caused by policies that, on the surface, appear to be neutral.

For example, a study at Harvey Mudd College, where only 10% of undergraduate computer science degrees were awarded to women, found that prior programming experience was highly valued and rewarded in the computer science department.¹²¹ While this may seem like an “objective” measure, men were more likely than women to have prior experience, and students with less programming

experience reported a lower sense of belonging in the introductory course. The department increased the proportion of women receiving degrees to 55% by allowing students to self-select into one of two introductory courses, one for students with programming experience and one for students without (both of which prepared students equally well for subsequent courses); training faculty to reduce potential intimidation for students with less experience; and sending women students to an annual conference celebrating women in computing. These changes reached beyond surface-level accommodations to ensure that women were supported not only to enter the program, but to succeed there.

Institutions can also promote inclusion through the resources and guidance they provide to students and families. A recent analysis of 23 California colleges’ websites suggests that accurate information and user-friendly navigation can support equitable outcomes by helping students who may not have access to academic counseling understand their course placement options within different mathematics pathways.¹²² A series of studies at a medium-sized university serving a predominantly wealthy student body found that students from families facing economic disadvantage were more likely to report being confident in their academic ability when the university promoted resources like financial aid and work study—rather than the size of their endowment—because they perceived that the institution valued socioeconomic diversity.¹²³

Institutions and systems can also support belonging through policies and norms that ensure equitable access to resources and illuminate the “hidden curriculum,” especially in environments that have historically excluded some groups. At the University of California, Berkeley, for example, students in the College of Chemistry are formally introduced to research via lab rotations and faculty are expected to guide students through the academic publication process and help them find prestigious academic positions and opportunities to present their work.¹²⁴ In other words, the program is structured to create equitable access to knowledge that otherwise might only be communicated through informal networks that are majority white, middle- and upper-class, and comprised of men. As a result, the chemistry department has much more uniform rates of publication across groups than other STEM departments at the university.

117 Reeves, “Caught up in Red Tape.”

118 Smith and Freyd, “Dangerous Safe Havens”; Smith, Cunningham, and Freyd, “Sexual Violence, Institutional Betrayal, and Psychological Outcomes for LGB College Students.”

119 Davis-Delano, Gone, and Fryberg, “The Psychosocial Effects of Native American Mascots.”

120 Murphy, Kroeper, and Ozier, “Prejudiced Places.”

121 Cheryan and Markus, “Masculine Defaults.”

122 Burdman and Purnell, “Crossing Signals.”

123 Browman and Destin, “The Effects of a Warm or Chilly Climate Toward Socioeconomic Diversity on Academic Motivation and Self-Concept.”

124 Mendoza-Denton et al., “Differences in STEM Doctoral Publication by Ethnicity, Gender and Academic Field at a Large Public Research University.”

Both K-12 and postsecondary systems can learn about their students' experiences with policies and practices—and identify ways to improve those experiences—by listening to their students and families and explicitly positioning them as experts.

Attentive institutional communications can also help maintain students' sense of belonging through challenges by reducing ambiguity about expectations and normalizing the use of supports.¹²⁵ For example, a selective university on the West Coast sought to better understand why only one in four students placed on academic probation was returning to good standing.¹²⁶ While administrators believed that probation was a helpful process for connecting students to resources and expressing care and concern for students, they learned that students were having a different experience; students described the experience of being notified of academic probation as stressful, surprising, frustrating, and embarrassing. In a series of trials at multiple college and university campuses, administrators revised their academic probation notification letters to reframe probation as a process for learning and growth, communicate that academic difficulties are not uncommon, and acknowledge that financial, health, and family issues can contribute to academic difficulty. The revisions diminished students' sense of shame and stigma, and

considered dropping out.¹²⁷ At the selective university that piloted the study, the new letter resulted in more students meeting with their advisor promptly, ending their probation, and remaining enrolled in school.

Both K-12 and postsecondary systems can learn about their students' experiences with policies and practices—and identify ways to improve those experiences—by listening to their students and families and explicitly positioning them as experts. Opportunities for students to share their voice and actively participate in decision making, such as student representation on advisory groups, school boards, and hiring committees, communicate that student perspectives are valued and stand to deepen and improve organizational change efforts.¹²⁸

Participating students can also benefit from these opportunities, as shown, for example, in a qualitative study of a high school serving a racially diverse group of students from immigrant and working class families.¹²⁹ By analyzing interviews and observations of meetings and conversations, this study showed that student voice activities, such as advising on school improvement and participating in student outreach efforts, were meaningful to students and supported their sense of belonging, competence, and agency. Critically, efforts that offer students little more than token participation can stifle the development of trust and lead students to disengage.¹³⁰

Connecting access, relationships, instruction, and system-level support: The case of the African American Male Achievement Initiative

In Oakland, California, the African American Male Achievement (AAMA) Initiative¹³¹ brought together several of the characteristics of belonging-supportive environments identified above—including racial and ethnic representation in the student body, among educators, and in the curriculum; support for positive educator, peer, and family relationships; and a system-wide policy audit to address bias and discrimination. The program was the first in the nation to embed a culturally-relevant curriculum specifically targeted to Black male high school students into the regular school day at the district level.

Specifically, the program carefully selected Black male instructors based on their involvement in the Black

community, understanding of youth development, and teaching experience. The program was embedded in the regular school day and offered students sustained relationships, affirmation, and high expectations from the instructors. Students with diverse achievement levels were grouped in the same classrooms. The program emphasized academic mentoring and used materials and instructional methods that aligned with students' lived experiences. Content also placed a special focus on students' critical understanding of society and their role in it, through community-based projects and units like, "The Struggle for Liberation and Dignity," and "The Black Male Image in American Media." Students attended conferences, community gatherings, and completed a summer internship, and district leadership provided professional development

125 Walton and Brady, "Bad' Things Reconsidered."

126 Brady et al., "Revising the Scarlet Letter of Academic Probation."

127 Brady et al., "Student Academic Standing Success Project."

128 Mitra, "Student Voice in Secondary Schools"; Kornbluh et al., "Youth Participatory Action Research as an Approach to Sociopolitical Development and the New Academic Standards."

129 Mitra, "The Significance of Students."

130 Biddle, "Trust Formation When Youth and Adults Partner to Lead School Reform"; Mitra, "Collaborating with Students."

131 See <https://www.ousd.org/Page/495> and <https://kingmakersofoakland.org/> for more information.

for teachers and engaged parents to support their child's college readiness.

Qualitative and descriptive quantitative research found several positive changes that coincided with the implementation of the AAMA in Oakland, including improved relationships between students and teachers, improved trust between families and schools, and improved grades and lower suspension rates for Black male students.¹³² A quasi-experimental study, using data from a 12-year period, confirmed that AAMA increased the high school graduation rate for Black male students by 3.2 percentage points, and also seemed to have positive “spillover” effects for Black female students.¹³³

These effects are notable, compared to other education reform strategies. They show the power of comprehensively approaching the creation of belonging-supportive environments at the interpersonal, instructional, and institutional levels, so that students' experiences of being valued and respected are consistent and lasting.¹³⁴ The program is also notable for its *targeted universalist* approach, in which the pursuit of common goals (in this case, high school graduation) is accompanied by differentiated strategies for achieving those goals that are tailored to how groups are positioned in society (in this case, a program customized for Black male students in Oakland). Targeted universalism is a valuable approach for creating environments that support belonging for every student.

Where do we go from here?

An extensive body of research from multiple disciplines demonstrates the importance of belonging for students' academic performance and well-being. It also illustrates that marginalized students are often expected to learn in educational environments that are both materially inferior to those afforded to their more advantaged peers and steeped in racist, sexist, and classist narratives and beliefs about intelligence and merit. Building and sustaining environments that respect each student as an individual, affirm each student's capacity to succeed, and recognize each student's agency and contributions requires attention to the wide array of policies, practices, and norms that often reflect the exclusionary history of our education system and create marginalizing experiences for many students.

While this synthesis aims to provide a diverse set of research-based entry points to creating belonging-supportive environments, it is also important to recognize the limitations of existing scholarship. Although a growing body of work conceptualizes belonging for several minoritized student groups, additional research is needed to understand the factors that support or threaten belonging for different groups, and how this varies within groups given students' multiple identities and prior experiences. Additionally, while research suggests that addressing any one of the highlighted aspects of the environment can have a positive effect on students' experiences and outcomes, more work is needed to understand the interdependence of these factors and how they can reinforce or counteract one another.

Opportunities to systematically support every student to feel accepted and respected as a valued contributor and thinker include ensuring equitable access to learning environments; enabling supportive relationships with educators, peers, and families; utilizing instructional resources and pedagogy that offer both mirrors and windows to every student; and enacting system-level policies and practices that communicate respect, high expectations, and support for every student. **The wide range of factors included in this synthesis, even without being exhaustive, suggests that stakeholders throughout our education system have a role to play in creating spaces where every student can belong.**

132 Nasir et al., “Dirt on My Record”; Givens et al., “Modeling Manhood”; Nasir and Givens, *We Dare Say Love*.

133 Dee and Penner, “My Brother's Keeper?”

134 Gray, Hope, and Matthews, “Black and Belonging at School.”

135 Powell, Menendian, and Ake, “Targeted Universalism.”

References

- Agarwal, P. (2020). *Disrupting Gendered Epistemic Injustice in K-12 mathematics* – A Research Synthesis. OSF Preprints. <https://doi.org/10.31219/osf.io/7merv>
- Allen, K., Kern, M. L., Vella-Brodrick, D., Hattie, J., & Waters, L. (2018). What Schools Need to Know About Fostering School Belonging: A Meta-analysis. *Educational Psychology Review*, 30(1), 1–34. <https://doi.org/10.1007/s10648-016-9389-8>
- Ball, D. L. (2020, March 30). *Supporting professionals to counteract racism and oppression in the discretionary spaces of their work*. 2020 NCSM Virtual Conference.
- Bang, M., & Medin, D. (2010). Cultural processes in science education: Supporting the navigation of multiple epistemologies. *Science Education*, 94(6), 1008–1026. <https://doi.org/10.1002/sce.20392>
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117(3), 497–529. <https://doi.org/10.1037/0033-2909.117.3.497>
- Beilock, S. L., Rydell, R. J., & McConnell, A. R. (2007). Stereotype threat and working memory: Mechanisms, alleviation, and spillover. *Journal of Experimental Psychology: General*, 136(2), 256–276.
- Belsha, K. (2020, January 16). *How hair discrimination bans are affecting students and schools*. Chalkbeat. <https://www.chalkbeat.org/2020/1/16/21121830/states-and-cities-are-banning-hair-discrimination-here-s-how-that-s-affecting-schools>
- Bian, L., Leslie, S.-J., Murphy, M. C., & Cimpian, A. (2018). Messages about brilliance undermine women's interest in educational and professional opportunities. *Journal of Experimental Social Psychology*, 76, 404–420. <https://doi.org/10.1016/j.jesp.2017.11.006>
- Biddle, C. (2017). Trust Formation When Youth and Adults Partner to Lead School Reform: A Case Study of Supportive Structures and Challenges. *Journal of Organizational and Educational Leadership*, 2(2). <https://eric.ed.gov/?id=EJ1144806>
- Binning, K. R., Kaufmann, N., McGreevy, E. M., Fotuhi, O., Chen, S., Marshman, E., Kalender, Z. Y., Limeri, L., Betancur, L., & Singh, C. (2020). Changing Social Contexts to Foster Equity in College Science Courses: An Ecological-Belonging Intervention. *Psychological Science*, 31(9), 1059–1070. <https://doi.org/10.1177/0956797620929984>
- Bishop, R. S. (1990). Mirrors, windows, and sliding glass doors. *Perspectives*, 6(3), ix–xi.
- Bjorklund, Jr., P. (2019). “Whoa. You Speak Mexican?”: Latina/o High School Students’ Sense of Belonging in Advanced Placement and Honors Classes. *Journal of Education for Students Placed at Risk (JESPAR)*, 24(2), 109–131. <https://doi.org/10.1080/10824669.2019.1570202>
- Blad, E. (2021, January 28). School Sports a Fresh Front in State Battles Over Transgender Students’ Rights. *Education Week*. <https://www.edweek.org/policy-politics/school-sports-a-fresh-front-in-state-battles-over-transgender-students-rights/2021/01>
- Bottiani, J. H., Bradshaw, C. P., & Mendelson, T. (2017). A multilevel examination of racial disparities in high school discipline: Black and white adolescents’ perceived equity, school belonging, and adjustment problems. *Journal of Educational Psychology*, 109(4), 532–545. <https://doi.org/10.1037/edu0000155>
- Brady, L. M., Fryberg, S. A., & Shoda, Y. (2018). Expanding the interpretive power of psychological science by attending to culture. *Proceedings of the National Academy of Sciences*, 115(45), 11406–11413. <https://doi.org/10.1073/pnas.1803526115>
- Brady, L. M., Higheagle Strong, Z., & Fryberg, S. A. (2020). The mismeasure of Native American students: Using data disaggregation to promote identity safety. In R. T. Teranishi, B. M. D. Nguyen, E. R. Curammeng, & C. M. Alcantar (Eds.), *Measuring Race: Why Disaggregating Data Matters for Addressing Educational Inequality*. Teachers College Press.
- Brady, S. T., Cohen, G. L., Jarvis, S. N., & Walton, G. M. (2020). A brief social-belonging intervention in college improves adult outcomes for black Americans. *Science Advances*, 6(18), eaay3689. <https://doi.org/10.1126/sciadv.aay3689>
- Brady, S. T., Kroeper, K. M., Henderson, A., & Ozier, E. M. (in progress). *Student Academic Standing Success Project*. <https://collegetransitioncollaborative.org/academic-standing/>
- Brady, S. T., Walton, G. M., Cohen, G. L., Fotuhi, O., Gomez, E., & Urstein, R. (2018). Revising the scarlet letter of academic probation: Reframing institutional messages to increase student success and reduce shame and stigma. Manuscript in preparation.
- Browman, A., & Destin, M. (2016). The Effects of a Warm or Chilly Climate Toward Socioeconomic Diversity on Academic Motivation and Self-Concept. *Personality & Social Psychology Bulletin*, 42(2), 172–187. <https://doi.org/10.1177/0146167215619379>
- Burdman, P., & Purnell, R. D. (2020). *Crossing Signals: What College Websites Tell Students About Taking Mathematics*. <https://justequations.org/resource/crossing-signals-report-082020/>
- Calabrese Barton, A., & Tan, E. (2020). Beyond Equity as Inclusion: A Framework of “Rightful Presence” for Guiding Justice-Oriented Studies in Teaching and Learning. *Educational Researcher*, 49(6), 433–440. <https://doi.org/10.3102/0013189X20927363>
- Calarco, J. M. (2020). Avoiding Us versus Them: How Schools’ Dependence on Privileged “Helicopter” Parents Influences Enforcement of Rules. *American Sociological Review*, 85(2), 223–246. <https://doi.org/10.1177/0003122420905793>
- Carr, P. B., & Walton, G. M. (2014). Cues of working together fuel intrinsic motivation. *Journal of Experimental Social Psychology*, 53, 169–184. <https://doi.org/10.1016/j.jesp.2014.03.015>
- Carrell, S. E., & Kurlaender, M. (2020). *My Professor Cares: Experimental Evidence on the Role of Faculty Engagement* (No. w27312). National Bureau of Economic Research. <https://doi.org/10.3386/w27312>
- Chen, G. A., & Horn, I. (2020). *Reviewing the Research on Marginalization in Mathematics Education*. OSF Preprints. <https://doi.org/10.31219/osf.io/nv6kd>
- Cheryan, S., & Markus, H. R. (2020). Masculine defaults: Identifying and mitigating hidden cultural biases. *Psychological Review*, 127(6), 1022–1052. <https://doi.org/10.1037/rev0000209>
- Cheryan, S., Plaut, V. C., Davies, P. G., & Steele, C. M. (2009). Ambient belonging: How stereotypical cues impact gender participation in computer science. *Journal of Personality and Social Psychology*, 97(9), 1045–1060.
- Cheryan, S., Siy, J. O., Vichayapai, M., Drury, B. J., & Kim, S. (2011). Do Female and Male Role Models Who Embody STEM Stereotypes Hinder Women’s Anticipated Success in STEM? *Social Psychological and Personality Science*, 2(6), 656–664. <https://doi.org/10.1177/1948550611405218>
- Cheung, C. S. S., & Pomerantz, E. M. (2012). Why does parents’ involvement enhance children’s achievement? The role of parent-oriented motivation. *Journal of Educational Psychology*, 104(3), 820–832. <https://doi.org/10.1037/a0027183>
- Cohen, E. G., Lotan, R. A., Scarloss, B. A., & Arellano, A. R. (1999). Complex instruction: Equity in cooperative learning classrooms. *Theory Into Practice*, 38(2), 80–86. <https://doi.org/10.1080/00405849909543836>

- Covarrubias, R., & Fryberg, S. A. (2015). The impact of self-relevant representations on school belonging for Native American students. *Cultural Diversity and Ethnic Minority Psychology*, 21(1), 10–18.
- Crone, E. A., & Dahl, R. E. (2012). Understanding adolescence as a period of social-affective engagement and goal flexibility. *Nature Reviews Neuroscience*, 13(9), 636–650. <https://doi.org/10.1038/nrn3313>
- Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2020). Implications for educational practice of the science of learning and development. *Applied Developmental Science*, 24(2), 97–140. <https://doi.org/10.1080/10888691.2018.1537791>
- Dasgupta, N. (2011). Ingroup Experts and Peers as Social Vaccines Who Inoculate the Self-Concept: The Stereotype Inoculation Model. *Psychological Inquiry*, 22(4), 231–246. <https://doi.org/10.1080/1047840X.2011.607313>
- Davis-Delano, L. R., Gone, J. P., & Fryberg, S. A. (2020). The psychosocial effects of Native American mascots: A comprehensive review of empirical research findings. *Race Ethnicity and Education*, 1–21.
- Day, J. K., Snapp, S. D., & Russell, S. T. (2016). Supportive, not punitive, practices reduce homophobic bullying and improve school connectedness. *Psychology of Sexual Orientation and Gender Diversity*, 3(4), 416–425. <https://doi.org/10.1037/sgd0000195>
- Debnam, K. J., Johnson, S. L., Waasdorp, T. E., & Bradshaw, C. P. (2014). Equity, Connection, and Engagement in the School Context to Promote Positive Youth Development. *Journal of Research on Adolescence*, 24(3), 447–459. <https://doi.org/10.1111/jora.12083>
- DeCuir-Gunby, J. T., & Schutz, P. A. (2014). Researching Race Within Educational Psychology Contexts. *Educational Psychologist*, 49(4), 244–260. <https://doi.org/10.1080/00461520.2014.957828>
- Dee, T., & Penner, E. (2019). *My Brother's Keeper? The Impact of Targeted Educational Supports* (No. w26386). National Bureau of Economic Research. <https://doi.org/10.3386/w26386>
- Dee, T. S., & Penner, E. K. (2017). The Causal Effects of Cultural Relevance: Evidence From an Ethnic Studies Curriculum. *American Educational Research Journal*, 54(1), 127–166.
- Destin, M., & Svoboda, R. C. (2017). A brief randomized controlled intervention targeting parents improves grades during middle school. *Journal of Adolescence*, 56, 157–161. <https://doi.org/10.1016/j.adolescence.2017.02.010>
- Dittmann, A. G., Stephens, N. M., & Townsend, S. S. M. (2020). Achievement is not class-neutral: Working together benefits people from working-class contexts. *Journal of Personality and Social Psychology*, 119(3), 517–539. <https://doi.org/10.1037/pspa0000194>
- Duncan, G. J., & Murnane, R. J. (2011). *Whither Opportunity?: Rising Inequality, Schools, and Children's Life Chances*. Russell Sage Foundation.
- Dweck, C. S., & Yeager, D. S. (2019). Mindsets: A View From Two Eras. *Perspectives on Psychological Science : A Journal of the Association for Psychological Science*, 14(3), 481–496. <https://doi.org/10.1177/1745691618804166>
- Eccles, J. S., Midgley, C., Wigfield, A., Buchanan, C. M., Reuman, D., Flanagan, C., & Mac Iver, D. (1993). Development during adolescence: The impact of stage-environment fit on young adolescents' experiences in schools and in families. *American Psychologist*, 48(2), 90–101. <https://doi.org/10.1037/0003-066X.48.2.90>
- Farrington, C. A. (2020). Equitable learning and development: Applying science to foster liberatory education. *Applied Developmental Science*, 24(2), 159–169. <https://doi.org/10.1080/10888691.2019.1609730>
- Fong, C. J., Alejandro, A. J., Krou, M. R., Segovia, J., & Johnston-Ashton, K. (2019). Ya'at'e'eh: Race-reimagined belongingness factors, academic outcomes, and goal pursuits among Indigenous community college students. *Contemporary Educational Psychology*, 59, 101805. <https://doi.org/10.1016/j.cedpsych.2019.101805>
- Freire, P. (1968). *Pedagogy of the Oppressed*. Bloomsbury Publishing USA.
- Fryberg, S. A., Covarrubias, R., & Burack, J. A. (2018). The ongoing psychological colonization of North American indigenous people: Using social psychological theories to promote social justice. In *The Oxford Handbook of Social Psychology and Social Justice*. Oxford University Press.
- Fuligni, A. J. (2019). The Need to Contribute During Adolescence. *Perspectives on Psychological Science*, 14(3), 331–343. <https://doi.org/10.1177/1745691618805437>
- Galván, A. (2014). Insights about Adolescent Behavior, Plasticity, and Policy from Neuroscience Research. *Neuron*, 83(2), 262–265. <https://doi.org/10.1016/j.neuron.2014.06.027>
- Gay, G. (2010). *Culturally Responsive Teaching: Theory, Research, and Practice*. Teachers College Press.
- Givens, J. R., Nasir, N., Ross, K., & Royston, M. M. de. (2016). Modeling Manhood: Reimagining Black Male Identities in School. *Anthropology & Education Quarterly*, 47(2), 167–185. <https://doi.org/10.1111/aeq.12147>
- Goyer, J. P., Cohen, G. L., Cook, J. E., Master, A., Apfel, N., Lee, W., Henderson, A. G., Reeves, S. L., Okonofua, J. A., & Walton, G. M. (2019). Targeted identity-safety interventions cause lasting reductions in discipline citations among negatively stereotyped boys. *Journal of Personality and Social Psychology*, 117(2), 229–259. <https://doi.org/10.1037/pspa0000152>
- Goyer, J. P., Garcia, J., Purdie-Vaughns, V., Binning, K. R., Cook, J. E., Reeves, S. L., Apfel, N., Taborsky-Barba, S., Sherman, D. K., & Cohen, G. L. (2017). Self-affirmation facilitates minority middle schoolers' progress along college trajectories. *Proceedings of the National Academy of Sciences*, 114(29), 7594–7599. <https://doi.org/10.1073/pnas.1617923114>
- Gray, D. L. (2017). Is psychological membership in the classroom a function of standing out while fitting in? Implications for achievement motivation and emotions. *Journal of School Psychology*, 61, 103–121. <https://doi.org/10.1016/j.jsp.2017.02.001>
- Gray, D. L., Hope, E. C., & Matthews, J. S. (2018). Black and Belonging at School: A Case for Interpersonal, Instructional, and Institutional Opportunity Structures. *Educational Psychologist*, 53(2), 97–113. <https://doi.org/10.1080/00461520.2017.1421466>
- Gray, D. L., McElveen, T. L., Green, B. P., & Bryant, L. H. (2020). Engaging Black and Latinx students through communal learning opportunities: A relevance intervention for middle schoolers in STEM elective classrooms. *Contemporary Educational Psychology*, 60(101833). <https://doi.org/10.1016/j.cedpsych.2019.101833>
- Gripshover, S., & Paunesku, D. (2019). *How can schools support academic success while fostering healthy social and emotional development?* PERTS, Stanford University.
- Gutiérrez, K. D., & Rogoff, B. (2003). Cultural Ways of Learning: Individual Traits or Repertoires of Practice. *Educational Researcher*, 32(5), 19–25. <https://doi.org/10.3102/0013189X032005019>
- Hammond, Z. (2020, November 13). *Who gets to thrive? How insights from the science of learning and development can help advance anti-racist, equitable learning environments and education practices*. SoLD Alliance Series on Anti-Racism.
- Hanselman, P., Bruch, S. K., Gamoran, A., & Borman, G. D. (2014). Threat in Context: School Moderation of the Impact of Social Identity Threat on Racial/Ethnic Achievement Gaps. *Sociology of Education*, 87(2), 106–124. <https://doi.org/10.1177/0038040714525970>

- Hope, E. C., & Bañales, J. (2019). Black Early Adolescent Critical Reflection of Inequitable Sociopolitical Conditions: A Qualitative Investigation. *Journal of Adolescent Research*, 34(2), 167–200.
- Hope, E. C., & Jagers, R. J. (2014). The Role of Sociopolitical Attitudes and Civic Education in the Civic Engagement of Black Youth. *Journal of Research on Adolescence*, 24(3), 460–470. <https://doi.org/10.1111/jora.12117>
- Immordino-Yang, M. H., Darling-Hammond, L., & Krone, C. R. (2019). Nurturing Nature: How Brain Development Is Inherently Social and Emotional, and What This Means for Education. *Educational Psychologist*, 54(3), 185–204. <https://doi.org/10.1080/00461520.2019.1633924>
- Irizarry, Y. (2021). On Track or Derailed? Race, Advanced Math, and the Transition to High School. *Socius*, 7, 2378023120980293. <https://doi.org/10.1177/2378023120980293>
- Ispa-Landa, S. (2013). Gender, Race, and Justifications for Group Exclusion: Urban Black Students Bussed to Affluent Suburban Schools. *Sociology of Education*, 86(3), 218–233. <https://doi.org/10.1177/0038040712472912>
- Ispa-Landa, S. (2017). Racial and Gender Inequality and School Discipline: Toward a More Comprehensive View of School Policy. *Social Currents*, 4(6), 511–517. <https://doi.org/10.1177/2329496517704876>
- Ispa-Landa, S. (2018). Persistently Harsh Punishments Amid Efforts to Reform: Using Tools From Social Psychology to Counteract Racial Bias in School Disciplinary Decisions. *Educational Researcher*, 47(6), 384–390. <https://doi.org/10.3102/0013189X18779578>
- Jackson, C. K., Porter, S. C., Easton, J. Q., Blanchard, A., & Kiguel, S. (2020). School Effects on Socio-emotional Development, *School-Based Arrests, and Educational Attainment* (No. w26759). National Bureau of Economic Research. <https://doi.org/10.3386/w26759>
- James, M. C., Butterfield, V., Jones, K. L., & Mokuria, V. G. (2017). Opportunity for All: An Analysis of Equality and Equity in Advanced Placement Programming in a US High School. *International Journal of Innovation and Research in Educational Sciences*, 4(1), 15–21.
- Jaxon, J., Lei, R. F., Shachnai, R., Chestnut, E. K., & Cimpian, A. (2019). The Acquisition of Gender Stereotypes about Intellectual Ability: Intersections with Race. *Journal of Social Issues*, 75(4), 1192–1215. <https://doi.org/10.1111/josi.12352>
- Johnson, A. M. (in preparation). *Social class, culture, and the reproduction of inequality in collaborative experiences among college students in STEM*.
- Johnson, R. C. (2011). *Long-run Impacts of School Desegregation & School Quality on Adult Attainments* (No. w16664). National Bureau of Economic Research. <https://doi.org/10.3386/w16664>
- Juvonen, J., Lessard, L. M., Rastogi, R., Schacter, H. L., & Smith, D. S. (2019). Promoting Social Inclusion in Educational Settings: Challenges and Opportunities. *Educational Psychologist*, 54(4), 250–270. <https://doi.org/10.1080/00461520.2019.1655645>
- Juvonen, J. (2006). Sense of Belonging, Social Bonds, and School Functioning. In *Handbook of educational psychology* (pp. 655–674). Lawrence Erlbaum Associates Publishers.
- Korman, H. T. N., O’Keefe, B., & Repka, M. (2020). *Missing in the Margins: Estimating the Scale of the COVID-19 Attendance Crisis*. Bellwether Education Partners. <https://bellwethereducation.org/publication/missing-margins-estimating-scale-covid-19-attendance-crisis>
- Kornbluh, M., Ozer, E. J., Allen, C. D., & Kirshner, B. (2015). Youth Participatory Action Research as an Approach to Sociopolitical Development and the New Academic Standards: Considerations for Educators. *The Urban Review*, 47(5), 868–892. <https://doi.org/10.1007/s11256-015-0337-6>
- Kraft, M. A., & Dougherty, S. M. (2013). The Effect of Teacher–Family Communication on Student Engagement: Evidence From a Randomized Field Experiment. *Journal of Research on Educational Effectiveness*, 6(3), 199–222. <https://doi.org/10.1080/19345747.2012.743636>
- Kraft, M. A., & Rogers, T. (2015). The underutilized potential of teacher-to-parent communication: Evidence from a field experiment. *Economics of Education Review*, 47, 49–63. <https://doi.org/10.1016/j.econedurev.2015.04.001>
- Kumar, R., Zusho, A., & Bondie, R. (2018). Weaving Cultural Relevance and Achievement Motivation Into Inclusive Classroom Cultures. *Educational Psychologist*, 53(2), 78–96. <https://doi.org/10.1080/00461520.2018.1432361>
- Ladson-Billings, G. (2002). But that’s just good teaching! The case for culturally relevant pedagogy. In *Improving schools for African American students: A reader for educational leaders* (pp. 95–102). Charles C Thomas Publisher, Ltd.
- Ladson-Billings, G. (2006). From the Achievement Gap to the Education Debt: Understanding Achievement in U.S. Schools. *Educational Researcher*, 35(7), 3–12. <https://doi.org/10.3102/0013189X035007003>
- Lewis, A. E., & Diamond, J. B. (2015). Despite the Best Intentions: *How Racial Inequality Thrives in Good Schools*. Oxford University Press.
- López, F. A. (2017). Altering the Trajectory of the Self-Fulfilling Prophecy: Asset-Based Pedagogy and Classroom Dynamics. *Journal of Teacher Education*, 68(2), 193–212.
- Maloney, T., & Matthews, J. S. (2020). Teacher Care and Students’ Sense of Connectedness in the Urban Mathematics Classroom. *Journal for Research in Mathematics Education*, 51(4), 399–432. <https://doi.org/10.5951/jresmetheduc-2020-0044>
- Master, A., Cheryan, S., & Meltzoff, A. N. (2014). Reducing adolescent girls’ concerns about STEM stereotypes: When do female teachers matter? *Revue internationale de psychologie sociale*, Tome 27(3), 79–102.
- Matthews, J. S., & López, F. (2019). Speaking their language: The role of cultural content integration and heritage language for academic achievement among Latino children. *Contemporary Educational Psychology*, 57, 72–86. <https://doi.org/10.1016/j.cedpsych.2018.01.005>
- McGee, E. O. (2016). Devalued Black and Latino Racial Identities: A By-Product of STEM College Culture? *American Educational Research Journal*, 53(6), 1626–1662. <https://doi.org/10.3102/0002831216676572>
- Mendoza-Denton, R., Patt, C., Fisher, A., Eppig, A., Young, I., Smith, A., & Richards, M. A. (2017). Differences in STEM doctoral publication by ethnicity, gender and academic field at a large public research university. *PLOS ONE*, 12(4), e0174296. <https://doi.org/10.1371/journal.pone.0174296>
- Mikami, A. Y., Ruzek, E. A., Hafen, C. A., Gregory, A., & Allen, J. P. (2017). Perceptions of Relatedness with Classroom Peers Promote Adolescents’ Behavioral Engagement and Achievement in Secondary School. *Journal of Youth and Adolescence*, 46(11), 2341–2354. <https://doi.org/10.1007/s10964-017-0724-2>
- Mitra, D. (2018). Student voice in secondary schools: The possibility for deeper change. *Journal of Educational Administration*, 56(5), 473–487. <https://doi.org/10.1108/JEA-01-2018-0007>
- Mitra, D. L. (2004). The significance of students: Can increasing “student voice” in schools lead to gains in youth development? *Teachers College Record*, 106(4), 651–688. <https://doi.org/10.1111/j.1467-9620.2004.00354.x>
- Mitra, D. L. (2009). Collaborating with Students: Building Youth-Adult Partnerships in Schools. *American Journal of Education*, 115(3), 407–436. <https://doi.org/10.1086/597488>

- Morales-Chicas, J., & Graham, S. (2017). Latinos' Changing Ethnic Group Representation From Elementary to Middle School: Perceived Belonging and Academic Achievement. *Journal of Research on Adolescence*, 27(3), 537–549. <https://doi.org/10.1111/jora.12292>
- Muenks, K., Canning, E. A., LaCrosse, J., Green, D. J., Zirkel, S., Garcia, J. A., & Murphy, M. C. (2020). Does my professor think my ability can change? Students' perceptions of their STEM professors' mindset beliefs predict their psychological vulnerability, engagement, and performance in class. *Journal of Experimental Psychology: General*, 149(11), 2119–2144. <https://doi.org/10.1037/xge0000763>
- Muhammad, G. E. (2018). A Plea for Identity and Criticality: Reframing Literacy Learning Standards Through a Four-Layered Equity Model. *Journal of Adolescent & Adult Literacy*, 62(2), 137–142. <https://doi.org/10.1002/jaal.869>
- Murphy, M. C., Gopalan, M., Carter, E. R., Emerson, K. T. U., Bottoms, B. L., & Walton, G. M. (2020). A customized belonging intervention improves retention of socially disadvantaged students at a broad-access university. *Science Advances*, 6(29), eaba4677. <https://doi.org/10.1126/sciadv.aba4677>
- Murphy, M. C., Kroeper, K. M., & Ozier, E. M. (2018). Prejudiced Places: How Contexts Shape Inequality and How Policy Can Change Them. *Policy Insights from the Behavioral and Brain Sciences*, 5(1), 66–74. <https://doi.org/10.1177/2372732217748671>
- Murphy, M. C., Steele, C. M., & Gross, J. J. (2007). Signaling Threat: How Situational Cues Affect Women in Math, Science, and Engineering Settings. *Psychological Science*, 18(10), 879–885. <https://doi.org/10.1111/j.1467-9280.2007.01995.x>
- Murrar, S., Campbell, M. R., & Brauer, M. (2020). Exposure to peers' pro-diversity attitudes increases inclusion and reduces the achievement gap. *Nature Human Behaviour*, 4(9), 889–897. <https://doi.org/10.1038/s41562-020-0899-5>
- Museum, S. D., & Kiang, P. N. (2009). Deconstructing the model minority myth and how it contributes to the invisible minority reality in higher education research. *New Directions for Institutional Research*, 2009(142), 5–15. <https://doi.org/10.1002/ir.292>
- Nasir, N. S. (2020). Teaching for equity: Where developmental needs meet racialized structures. *Applied Developmental Science*, 24(2), 146–150. <https://doi.org/10.1080/10888691.2019.1609737>
- Nasir, S. N., Givens, J. R., & Chatmon, C. P. (Eds.). (2019). *"We Dare Say Love": Supporting Achievement in the Educational Life of Black Boys*. Teachers College Press.
- Nasir, N. S., Hand, V., & Taylor, E. V. (2008). Culture and Mathematics in School: Boundaries Between "Cultural" and "Domain" Knowledge in the Mathematics Classroom and Beyond. *Review of Research in Education*, 32(1), 187–240. <https://doi.org/10.3102/0091732X07308962>
- Nasir, N. S., Ross, K. M., McKinney de Royston, M., Givens, J., & Bryant, J. (2013). Dirt on My Record: Rethinking Disciplinary Practices in an All-Black, All-Male Alternative Class. *Harvard Educational Review*, 83(3), 489–512. <https://doi.org/10.17763/haer.83.3.t56958753811p56t>
- Nguyen, M. H., Chan, J., Nguyen, B. M. D., & Teranishi, R. T. (2018). Beyond compositional diversity: Examining the campus climate experiences of Asian American and Pacific Islander students. *Journal of Diversity in Higher Education*, 11(4), 484–501. <https://doi.org/10.1037/dhe0000071>
- Okonofua, J. A., Perez, A. D., & Darling-Hammond, S. (2020). When policy and psychology meet: Mitigating the consequences of bias in schools. *Science Advances*, 6(42), eaba9479. <https://doi.org/10.1126/sciadv.aba9479>
- Okonofua, J. A., Walton, G. M., & Eberhardt, J. L. (2016). A Vicious Cycle: A Social-Psychological Account of Extreme Racial Disparities in School Discipline. *Perspectives on Psychological Science*, 11(3), 381–398.
- Oyserman, D., & Lewis, N. A. (2017). Seeing the Destination AND the Path: Using Identity-Based Motivation to Understand and Reduce Racial Disparities in Academic Achievement. *Social Issues and Policy Review*, 11(1), 159–194. <https://doi.org/10.1111/sipr.12030>
- Phillips, L. T., & Lowery, B. S. (2018). Herd Invisibility: The Psychology of Racial Privilege. *Current Directions in Psychological Science*, 27(3), 156–162. <https://doi.org/10.1177/0963721417753600>
- Powell, J. A., & Menéndez, S. (2017, June 29). The Problem of Othering: Towards Inclusiveness and Belonging. <http://www.otheringandbelonging.org/the-problem-of-othering/>
- Powell, J. A., Menéndez, S., & Ake, W. (2019). *Targeted Universalism: Policy & Practice*. Othering & Belonging Institute. <https://belonging.berkeley.edu/targeteduniversalism>
- Reeves, S. L. (2015). *Caught up in red tape: Bureaucratic hassles undermine sense of belonging in college among first generation students* [Thesis]. <https://doi.org/10.15781/T20G71>
- Riegle-Crumb, C., King, B., & Irizarry, Y. (2019). Does STEM Stand Out? Examining Racial/Ethnic Gaps in Persistence Across Postsecondary Fields. *Educational Researcher*, 48(3), 133–144. <https://doi.org/10.3102/0013189X19831006>
- Rogoff, B. (1998). Cognition as a collaborative process. In *Handbook of child psychology: Volume 2: Cognition, perception, and language* (pp. 679–744). John Wiley & Sons Inc.
- Rury, J. L., & Saatcioglu, A. (2011). Suburban Advantage: Opportunity Hoarding and Secondary Attainment in the Postwar Metropolitan North. *American Journal of Education*, 117(3), 307–342. <https://doi.org/10.1086/659210>
- Schmader, T., Johns, M., & Forbes, C. (2008). An integrated process model of stereotype threat effects on performance. *Psychological Review*, 115(2), 336–356. <https://doi.org/10.1037/0033-295X.115.2.336>
- Sethi, J., & Scales, P. C. (2020). Developmental relationships and school success: How teachers, parents, and friends affect educational outcomes and what actions students say matter most. *Contemporary Educational Psychology*, 63, 101904. <https://doi.org/10.1016/j.cedpsych.2020.101904>
- Skiba, R. J., & Losen, D. J. (2016). From Reaction to Prevention: Turning the Page on School Discipline. *American Educator*, 39(4), 4.
- Sleeter, C. E. (2012). Confronting the Marginalization of Culturally Responsive Pedagogy. *Urban Education*, 47(3), 562–584. <https://doi.org/10.1177/0042085911431472>
- Smith, Carly P., Cunningham, S. A., & Freyd, J. J. (2016). Sexual violence, institutional betrayal, and psychological outcomes for LGB college students. *Translational Issues in Psychological Science*, 2(4), 351–360. <https://doi.org/10.1037/tps0000094>
- Smith, Carly Parnitzke, & Freyd, J. J. (2013). Dangerous Safe Havens: Institutional Betrayal Exacerbates Sexual Trauma. *Journal of Traumatic Stress*, 26(1), 119–124. <https://doi.org/10.1002/jts.21778>
- Stephens, N. M., Fryberg, S. A., Markus, H. R., Johnson, C. S., & Covarrubias, R. (2012). Unseen disadvantage: How American universities' focus on independence undermines the academic performance of first-generation college students. *Journal of Personality and Social Psychology*, 102(6), 1178–1197. <https://doi.org/10.1037/a0027143>
- Stephens, N. M., Hamedani, M. G., & Destin, M. (2014). Closing the Social-Class Achievement Gap: A Difference-Education Intervention Improves First-Generation Students' Academic Performance and All Students' College Transition. *Psychological Science*, 25(4), 943–953. <https://doi.org/10.1177/0956797613518349>

- Tatum, A. W. (2015). Engaging African American Males in Reading: By providing meaningful reading material and encouraging honest debate, teachers can help African American adolescent males embrace the power of text. *Journal of Education*, 195(2), 1–4. <https://doi.org/10.1177/002205741519500202>
- Tilly, C. (1998). *Durable Inequality*. University of California Press.
- Tintiango-Cubales, A., Kohli, R., Sacramento, J., Henning, N., Agarwal-Rangnath, R., & Sleeter, C. (2015). Toward an Ethnic Studies Pedagogy: Implications for K-12 Schools from the Research. *The Urban Review*, 47(1), 104–125. <https://doi.org/10.1007/s11256-014-0280-y>
- Turner, J. C., Gray, D. L., Anderman, L. H., Dawson, H. S., & Anderman, E. M. (2013). Getting to know my teacher: Does the relation between perceived mastery goal structures and perceived teacher support change across the school year? *Contemporary Educational Psychology*, 38(4), 316–327. <https://doi.org/10.1016/j.cedpsych.2013.06.003>
- Walton, G. M., & Brady, S. T. (2017). The many questions of belonging. In *Handbook of competence and motivation: Theory and application*, 2nd ed (pp. 272–293). The Guilford Press.
- Walton, G. M., & Brady, S. T. (2020). “Bad” things reconsidered. In J. P. Forgas, W. D. Crano, & K. Fiedler (Eds.), *Applications of Social Psychology: How Social Psychology Can Contribute to the Solution of Real-World Problems*. Routledge.
- Walton, G. M., & Cohen, G. L. (2007). A question of belonging: Race, social fit, and achievement. *Journal of Personality and Social Psychology*, 92(1), 82–96. <https://doi.org/10.1037/0022-3514.92.1.82>
- Walton, G. M., & Cohen, G. L. (2011). A brief social-belonging intervention improves academic and health outcomes of minority students. *Science*, 331(6023), 1447–1451. <https://doi.org/10.1126/science.1198364>
- Walton, G. M., & Wilson, T. D. (2018). Wise interventions: Psychological remedies for social and personal problems. *Psychological Review*, 125(5), 617–655. <https://doi.org/10.1037/rev0000115>
- Yeager, D. S., Purdie-Vaughns, V., Hooper, S. Y., & Cohen, G. L. (2017). Loss of Institutional Trust Among Racial and Ethnic Minority Adolescents: A Consequence of Procedural Injustice and a Cause of Life-Span Outcomes. *Child Development*, 88(2), 658–676. <https://doi.org/10.1111/cdev.12697>
- Yeager, D. S., Walton, G. M., Brady, S. T., Akcinar, E. N., Paunesku, D., Keane, L., Kamentz, D., Ritter, G., Duckworth, A. L., Urstein, R., Gomez, E. M., Markus, H. R., Cohen, G. L., & Dweck, C. S. (2016). Teaching a lay theory before college narrows achievement gaps at scale. *Proceedings of the National Academy of Sciences*, 113(24), E3341–E3348. <https://doi.org/10.1073/pnas.1524360113>
- Yosso, T. J. (2005). Whose culture has capital? A critical race theory discussion of community cultural wealth. *Race Ethnicity and Education*, 8(1), 69–91. <https://doi.org/10.1080/1361332052000341006>
- Zumbrunn, S., McKim, C., Buhs, E., & Hawley, L. R. (2014a). Support, belonging, motivation, and engagement in the college classroom: A mixed method study. *Instructional Science*, 42(5), 661–684. <https://doi.org/10.1007/s11251-014-9310-0>
- Zumbrunn, S., McKim, C., Buhs, E., & Hawley, L. R. (2014b). Support, belonging, motivation, and engagement in the college classroom: A mixed method study. *Instructional Science*, 42(5), 661–684. <https://doi.org/10.1007/s11251-014-9310-0>